III. REMARKS

Claims 1-27 are pending in this application. Applicants do not acquiesce in the correctness of the rejections and reserve the right to present specific arguments regarding any rejected claims not specifically addressed. Further, Applicants reserve the right to pursue the full scope of the subject matter of the original claims in a subsequent patent application that claims priority to the instant application. Reconsideration in view of the following remarks is respectfully requested.

In the Office Action, claims 4-9, 16-22 and 24-27 are rejected under 35 U.S.C. §112 as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 1-27 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Sung-Il Chien and Yung-Mok Baek, Hierarchical Block Matching Method for Fast Rotation of Binary Images, hereafter "Chien" in view of Suchendra M. Bhandarkar and Huaiyuan Yu, VLSI Implementation of Real-Time Image Rotation, hereafter "Bhandarkar." These rejections are respectfully traversed for the reasons stated below.

A. REJECTION OF CLAIMS 4-9, 16-22 AND 24-27 UNDER 35 U.S.C. §112

The Office has asserted that claims 4-9, 16-22 and 24-27 are indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants respectfully traverse this rejection. Applicants assert that K_h and K_v are clearly defined in the application, including but not limited to page 10, line 3 through page 12, line 8 of the specification. For example, in one embodiment, K_h and K_v may be fractions that

> ...are implemented as 1/8th increments, i.e., 1/8, ¼, 3/8, ½, 5/8, ¾ and 7/8. K_h indicates a horizontal fraction (for each X coordinate in columns C_0 to C_N, where N is an integer), and K_v indicates a vertical fraction (for Y coordinate in rows R_0 to R_M). Increments of K_h and K_v may be determined, for example, by dividing an indexing number by eight (8) to arrive at an increment number. The "indexing number" is the number of data points the extraction process must process in a first direction (e.g. horizontally) before stepping one row or column in the other direction. As an example, the indexing number of data points necessary to progress horizontally (e.g., along row R_0) before stepping one row vertically (i.e., from R_0 to R_1 in the Y-direction) may be found by taking the inverse of the tangent of skew angle. As an example, for a skew angle of 1°, the indexing number is approximately 57 data points (i.e., 1/tangent 1°), which divided by eight (8) provides an increment number of approximately sever (7). The dispersion of fraction K_h may then be distributed as follows: for data points 0-7 (i.e., data points corresponding to columns C_0 to C_7), K_h = 1/8; data points 8-14, K_h = ¼; data points 15-21, K_h = 3/8; and so on up to the 57th data point. As is apparent from the above distribution, where the indexing number is not divisible by eight, the distribution is made as close as possible to even segments. Page 10, lines 3-18.

Applicants respectfully submit that the above quoted section, as well as other sections of the specification, sufficiently describes the feature such that one skilled in the art would be enabled. Accordingly, Applicants request that the rejection be withdrawn.

B. REJECTION OF CLAIMS 1-27 UNDER 35 U.S.C. §103(a)

With regard to the 35 U.S.C. §103(a) rejection over Chien in view of Bhandarkar, Applicants initially assert that Chien teaches away from the combining of the references. In particular, Bhandarkar teaches image rotation that uses integer additions. Page 1015, col. 1, paragraph 2. The presence of these integer additions means that calculations must be performed in order to perform the Bhandarkar image rotation. In contrast, Chien teaches "...replac[ing] traditional calculation of rotation operations with simple matching of block patterns and drawing of their PMPs (predrawn mapping patterns)." Page 488, col. 2, IV. Conclusions section. As such, the calculations of Bhandarkar are incompatible with the teachings of Chien. Accordingly,

Applicants assert that the Office has failed to submit a *prima facie* case of obviousness and requests the withdrawal of the rejection.

With further regard to the 35 U.S.C. §103(a) rejection over Chien in view of Bhandarkar, Applicants assert that the combined references cited by the Office fail to teach or suggest each and every feature of the claimed invention. For example, with respect to independent claim 1, Applicants respectfully submit that, contrary to the argument of the Office, Bhandarkar fails to teach or suggest, *inter alia*, "...creating a rotated image that is substantially free of aliasing error using weighted sums of data points of the first image, wherein weighting depends on a skew angle of the first image and data point location in the first image" and similarly claimed in claims 10 and 23. Instead, Bhandarkar teaches generating addresses by adding the x-value to the cosine of the angle and adding the y-value to the sine of the angle. Page 1016, col. 1, paragraph 2. As such, the addresses in Bhandarkar are generated by adding a sine or cosine to a value and not by using weighted sums of data points. In contrast, the claimed invention includes "...creating a rotated image that is substantially free of aliasing error using weighted sums of data points of the first image, wherein weighting depends on a skew angle of the first image and data point location in the first image." Claim 1. As such, the rotated image as included in the claimed invention is not generated by simply adding a cosine or sine of an angle to an x or y value, but are instead created using weighted sums of data points of the first image, wherein weighting depends on a skew angle of the first image and a data point location in the first image. For the above stated reasons, the address generation in Bhandarkar is not equivalent to the creation of a rotated image as included in the claimed invention. Chien does not cure this deficiency. Accordingly, Applicants respectfully request withdrawal of the rejection.

With further regard to the 35 U.S.C. §103(a) rejection over Chien in view of Bhandarkar and further in view of unsupported factual assertions that the Office claim are obvious, Applicants submit that the Office's factual assertions amount to Official Notice. Applicants further submit that the Office's factual assertions are not properly based upon common knowledge. For example, Applicants assert that a method of rotating a first image in an image buffer is not obvious to one skilled in the art as asserted by the Office. Neither Chien nor Bhandarkar disclose rotating an image in an image buffer. Instead, Chien discloses only an image that is "...obtained by scanning document using optical scanners." Page 487, col. 1, final paragraph. Similarly, Bhandarkar discloses only a VLSI ASIC device for 2-D image rotation. Page 1015, col. 2, section 1.2. Nowhere does either Chien or Bhandarkar teach or suggest a method of rotating a first image in an image buffer. Accordingly, Applicants respectfully request that the Office withdraw the rejection or support the finding with references that show this feature.

Applicants further assert that the step of extracting first image data from the image buffer is not obvious to one skilled in the art as asserted by the Office. As argued above, neither Chien nor Bhandarkar discloses an image buffer. Instead, Chien discloses only an image that is "...obtained by scanning document using optical scanners." Page 487, col. 1, final paragraph. Similarly, Bhandarkar discloses only a VLSI device for processing an image. Nowhere does either Chien or Bhandarkar teach or suggest extracting first image data from the image buffer. Accordingly, Applicants respectfully request that the Office withdraw the rejection or support the finding with references that show this feature.

Applicants still further assert weighting that depends on a skew angle of the first image and data point location in the first image is not obvious to one skilled in the art as asserted by the Office. Instead, as argued above, Bhandarkar teaches generating addresses by adding the x-value to the cosine of the angle and adding the y-value to the sine of the angle. Page 1016, col. 1, paragraph 2. In contrast, Chien teaches "...replac[ing] traditional calculation of rotation operations with simple matching of block patterns and drawing of their PMPs (predrawn mapping patterns)." Page 488, col. 2, IV. However, neither teaches or suggests weighting or that weighting depends on a skew angle or the first image and data point location in the first image. Accordingly, Applicants respectfully request that the Office withdraw the rejection or support this finding, as well as all other unsubstantiated findings, with references that show the features.

With respect to claim 4, Applicants respectfully submit that, contrary to the argument of the Office, Chien fails to teach or suggest, *inter alia*, "...applying the following algorithm to the first image data:

$$V_0 = K_h * K_v (V1 + V4 - V2 - V3) + K_h (V3 - V4) + K_v (V2 - V4) + V4$$

wherein V_0 is a data point of the rotated image; V1, V2, V3 and V4 are first image data points that each incorporated a portion of V_0; and K_h and Kv are fractions that are functions of skew angle and data point location of the first image" and similarly claimed in claims 16, 24 and 27. The Office admits that Chien does not explicitly specify the algorithm as included in the claimed invention. However, the Office appears to argue that simply because Chien has an equation that uses an angle, the equations are identical. However, the Chien equation does not use multiple first image data points V1, V2, V3 and V4 and fractions that are functions of skew angle and data point location of the first image K_h and K_v. In contrast, the algorithm as included

in the claimed invention does not merely include an angle, as does the equation in Chien, but rather includes the entirety of the expression specified above. For the above stated reasons, the equation in Chien is not equivalent to the algorithm as included in the claimed invention. Accordingly, Applicants respectfully request that the Office's rejection be withdrawn.

With respect to claim 7, Applicants respectfully submit that, contrary to the argument of the Office, Chien fails to teach or suggest, *inter alia*, "...applying the following algorithm to the first image data:

$$V_0 = K_h (V3 - V4) + K_v (V2 - V4) + V4$$

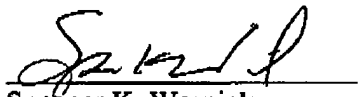
wherein V_0 is a data point of the rotated image; V2, V3, and V4 are data points of the first image that each incorporate a portion of V_0; and K_h and K_v are fractions that are functions of skew angle and data point location of the first image" and similarly claimed in claims 19 and 25. As with claim 4, the Office admits that Chien does not explicitly specify the algorithm as included in the claimed invention. However, the Office appears to argue that simply because Chien has an equation that uses an angle, the equations are identical. However, the Chien equation does not use multiple data points of the first image V2, V3 and V4 and fractions that are functions of skew angle and data point location of the first image K_h and K_v. In contrast, the algorithm as included in the claimed invention does not merely include an angle, as does the equation in Chien, but rather includes the entirety of the expression specified above. For the above stated reasons, the equation in Chien is not equivalent to the algorithm as included in the claimed invention. Accordingly, Applicants respectfully request that the Office's rejection be withdrawn.

With regard to the Office's other arguments regarding dependent claims, Applicants herein incorporate the arguments presented above with respect to independent claims listed above. In addition, Applicants submit that all dependant claims are allowable based on their own distinct features. However, for brevity, Applicants will forego addressing each of these rejections individually, but reserve the right to do so should it become necessary. Accordingly, Applicants respectfully request that the Office withdraw its rejection.

IV. CONCLUSION

Applicants respectfully submit that the application is in condition for allowance. Should the Examiner believe that anything further is necessary to place the application in better condition for allowance, he is requested to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



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